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EXAMINER
LANGEL, WAYNE A

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1754	6

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 824741	Applicant(s) Havlicek et al
	Examiner Lange	Group Art Unit 1754

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL.**

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle,* 1935 C.D. 1 1; 453 O.G. 213.

Disposition of Claims

☒ Claim(s) 1-25 is/are pending in the application.

Of the above claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-25 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claim(s) _____ are subject to restriction or election requirement

Application Papers

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. § 119 (a)–(d)

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119 (a)–(d).

☐ All ☐ Some* ☐ None of the:

☐ Certified copies of the priority documents have been received.

☐ Certified copies of the priority documents have been received in Application No. _____.

☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a))

*Certified copies not received: _____.

Attachment(s)

☒ Information Disclosure Stat ment(s), PTO–1449, Paper No(s). 3

☐ Int rview Summary, PTO–413

☒ Notice of Reference(s) Cited, PTO–892

☐ Notice of Informal Patent Application, PTO–152

☐ Notice of Draftsperson's Patent Drawing Review, PTO–948

☐ Oth r _____

Office Action Summary

The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless --
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 15 are rejected under 35 U.S.C. § 102(e) as being anticipated by Even et al. Even et al. disclose a process for treating an anion exchange resin with supercritical carbon dioxide. (See the Abstract and column 5, line 41 - column 6, line 47.) Even et al. teach at column 4, lines 58-67 that a supercritical fluid is a dense phase gas. Accordingly Even et al. disclose treating the anion exchange resin bed with carbon dioxide gas.

Claims 1 and 15 are rejected under 35 U.S.C. § 102(b) as being anticipated by either Holl et al. or Petheram. Holl et al.

and Petheram both disclose contacting anion exchange resins with aqueous mediums which contain carbon dioxide gas. (See the Abstract and column 5, line 45 - column 7, line 29 of Holl et al.; and the Abstract and column 3, line 62 - column 5, line 2 of Petheram.)

Claims 2-14, 16 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Petheram or Even et al. or Holl et al. Petheram, Even et al. and Holl et al. are relied upon as discussed hereinbefore. The limitations recited in claims 2-14, 16 and 17 would be prima facie obvious over Petheram or Even et al. or Holl et al., since it would be within the skill of one of ordinary skill in the art to modify the processes of Petheram or Even et al. or Holl et al. with the limitations recited in these claims. For example, regarding claims 2, 16 and 17, it would be prima facie obvious to employ these specific anion exchange resins, since the processes of Even et al., Holl et al. and Petheram are directed broadly to treatment of any anion exchange resin with the carbon dioxide gas. Regarding claims 3-7, it would be prima facie obvious to purify the carbon dioxide gas in any known or conventional manner before using it in the processes of Petheram, Even et al. and Holl et al., since one of ordinary skill in the art would be motivated not to contaminate the anion exchange resins of these references. Regarding claim 12, it would be within the skill of one of ordinary skill in the art to

determine a suitable or optimum time period for which to pass the carbon dioxide gas through the anion exchange resin. Regarding claims 13 and 14, it is conventional to rinse ion exchange resins with deionized water to further purify the resin. It would be further obvious to modify the process of Petheram or Even et al. or Holl et al. with such conventional step.

Claims 1 and 15 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Dias et al. Dias et al. disclose a method for extracting leachable contaminants from ion exchange resins by exposing the resins to supercritical carbon dioxide for a sufficient interval of time to allow at least a portion of the leachable contaminant to be solubilized by the supercritical carbon dioxide, followed by removal from the resin of the supercritical carbon dioxide having the leachable contaminant dissolved therein. (See the Abstract and column 1, line 51 - column 2, line 20.) The supercritical carbon dioxide of Dias et al. would be dense phase gaseous carbon dioxide. (See column 4, lines 58-67 of Even et al.) Dias et al. imply that the process may be employed for treating anion exchange resins, since Dias et al. discuss the preparation of anion exchange resins at column 3, lines 30-43. In any event, it would be prima facie obvious to employ the process of Dias et al. for treating anion exchange resins, since the process of Dias et al. is directed broadly to

the treatment of any anion exchange resin (cationic and anionic), and clearly implies at column 3, lines 30-42 that the process can be employed for treating anion exchange resins.

Claims 2-14, 16 and 17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Dias et al. Dias et al. is relied upon as discussed hereinbefore. The limitations recited in claims 2-14, 16 and 17 would be prima facie obvious over Dias et al., since it would be within the skill of one of ordinary skill in the art to modify the processes of Dias et al. with the limitations recited in these claims. For example, regarding claims 2, 16 and 17, it would be prima facie obvious to employ these specific anion exchange resins, since the process of Dias et al. is directed broadly to treatment of any anion exchange resin with the carbon dioxide gas. Regarding claims 3-7, it would be prima facie obvious to purify the carbon dioxide gas in any known or conventional manner before using it in the processes of Dias et al., since one of ordinary skill in the art would be motivated not to contaminate the anion exchange resins of these references. Regarding claim 12, it would be within the skill of one of ordinary skill in the art to determine a suitable or optimum time period for which to pass the carbon dioxide gas through the anion exchange resin. Regarding claims 13 and 14, it is conventional to rinse ion exchange resins with deionized water

to further purify the resin. It would be further obvious to modify the process of Dias et al. with such conventional step.

Claims 18-25 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiga et al. or Saito et al. in view of Dias et al. Shiga et al. and Saito et al. both disclose the purification of aqueous hydrogen peroxide solutions by passing the solutions through anion exchange resins. (See the Abstract and column 2, lines 22-61 of Shiga et al., and the Abstract and column 2, lines 8-56 of Saito et al.) The difference between the processes of Saito et al. and Shiga et al., and that recited in claims 18-25, is that Saito et al. and Shiga et al. do not disclose that the anion exchange resin should be one which has been treated with carbon dioxide gas. Dias et al. is relied upon as discussed hereinbefore. It would be prima facie obvious to employ the anion exchange resin of Dias et al. as the anion exchange resin in the process of either Shiga et al. or Saito et al., since the processes of Saito et al. and Shiga et al. are directed to the purification of hydrogen peroxide solutions for use in the electronics industry, and Dias et al. teach at column 1, lines 51-60 that the invention provides a method for removing unwanted contaminants from ion exchange resins by exposing the resins to supercritical carbon dioxide, which process is capable of reducing the levels of impurities in commercial ion exchange resins for use in the semiconductor and pharmaceutical

industries. Accordingly one would be motivated to employ the anion exchange resins of Dias et al., which have been treated with carbon dioxide gas, as the anion exchange resin of either Saito et al. or Shiga et al., to provide a more highly pure hydrogen peroxide solution for use in the electronics industry, which requires a highly pure solution.

Claims 4-7 and 9 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In claims 4 and 9, it is indefinite as to what would constitute "high purity water". For example, it is not clear as to what the purity of the water would have to be in order to be considered "high purity".

Newenhizen et al. is made of record for disclosing a method for regenerating ion exchange resins, wherein the regenerant is a combination of carbon dioxide which is mixed with water to form carbonic acid and citric acid.

Modell is made of record for disclosing a process for regenerating adsorbents with supercritical carbon dioxide.

Larsen is made of record for disclosing a process for regenerating weak acid cation exchange resins and weak base anion exchange resins by using carbon dioxide to regenerate the sodium form of an exhausted weak acid cation resin to its free acid form

and then using the sodium bicarbonate to regenerate weak base anion resins.

Turunen is made of record for disclosing a method for purifying an aqueous solution of hydrogen peroxide by contacting the hydrogen peroxide with carbon dioxide in its supercritical state.

Devos et al. is made of record for disclosing the purification of aqueous hydrogen peroxide solutions by passing the solutions through ion exchange resins.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Wayne A. Langel whose telephone number is (703) 308-0248. The examiner can normally be reached on Monday through Friday from 8 A.M. to 3:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman, can be reached on (703) 308-3837. The fax phone number for this Group is (703) 305-7718.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2351.

WAL:cdc

April 7, 2003

Wayne A. Langel

WAYNE A. LANGEL
PRIMARY EXAMINER